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PROCEEDINGS OF THE WESTERN FOUNDRYMEN'S ASSOCIATION.

The regular monthly meeting of the Western Foundrymen's Association was held Wednesday, July 20, at 7:30 p. m., at the Great Northern Hotel, Chicago. President G. H. Carver in the chair The minutes of the last regular meeting were approved as published.

The Society then proceeded with a

DISCUSSION ON TROLLEY SYSTEMS.

The paper entitled "Trolley Systems in the Foundry," by Herbert M. Ramp, read at the Cincinnati Convention of the American Foundrymen's Association, was read by the Secretary, as its discussion was appointed for the meeting.

Mr. Coffeen: We use the overhead trolley system in our gray iron foundry, but I am a little bit at a loss to give its comparative value, because I never have used on the same class of work any other system. However, from what I could learn from men who used the old track system, especially for distributing the iron, there is a remarkable gain in the use of the plan, and we have very little trouble with it. I have heard some criticism on the system concerning the trouble with the switches on the trolley. We

*This paper forms a part of the July issue of this journal.

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have very little now. Whether that is the result of long experience in the management of the system or not, I cannot say. On a good many of the floors for anything like large work we use a kind of overhead crane and penumatic hoists. I suppose they are more like a sort of trolley system. They make the work very fast on that class of work.

Mr. Carver: Can you describe in detail the system, whether it is used direct to pour off the molds, or simply as a method of carrying the gross weight to some convenient distributing point?

Mr. Coffeen: That depends on the work. Where the work is large enough to use a truck of iron, that is, 1,200 pounds and up, we use a crane for pouring, running across the floor and pouring right in the truck. We have some smaller cranes, hung from a trolley; the crane swings below. These are for lighter work, but they don't work so well. Such work as mower wheels and mower frames and the old style binder wheels, we pour from the crane. All the iron is carried on this trolley system to the floors and some of the castings are carried out on that. It is not arranged now so that we can get castings out and get the iron around at the same time, so we take the iron out on a wheelbarrow and handle the larger part of it that way.

Mr. Thompson: If the trolley system means, as I understand it, the running of a trolley on a single rail, and is thereby limited to the direction in which it will travel, I think the traveling air hoist, which has a movement in every direction, limited to the span of the crane and the length of the track, is better. I think a system of that kind can be put up in most any shop, no matter how low the roof is, and cover more ground to a good deal more advantage than a single rail system would. In regard to the handling of material from one department to another, I don't think there is anything can beat the surface track for that purpose. For handling castings from the foundry to the machine shop, for instance, a track with trucks will take a larger load of castings than can be handled on a trolley. It would appear to me that the amount of material that could be transferred that way would be quite limited. A load of castings may comprise several

hundred pieces and these can be far easier handled by a truck than on anything which would be hung upon a single trolley track. About taking flasks to the yard: I think a surface track running past the end of each molder's floor, with the necessary turn-tables in the yard, will carry out more flasks in a given time and distribute them in different places in the yard than any trolley system. With the latter they would have to be re-loaded on trucks after they got to the end of the foundry to go out in the yard, which would necessitate double handling. If we compare the trolley system with the old style of circle cranes, it is certainly far ahead of them, saving a great deal of space; but I believe that the air hoist cranes, which can be made to span from 10 to 20 or 30 feet are superior to a single track trolley system.

Mr. Orbison: I have seen the trolley system in several foundries, in fact have worked at places where they have had trolley systems, but where they handled a lighter class of work. I do not think it would be practicable at all to handle a heavy class of work, and I agree with Mr. Thompson in that respect, that there is nothing like the surface track. Where they make light work, bench molding, etc., for distributing the iron it is a very good thing; but I never knew it to be for anything else but distributing, when it is handled by hand for the different floors.

Mr. Gardner: Mr. Ramp says: "Formerly when an engine or boiler was to be loaded, or any machinery or castings, it was accomplished by hand. Now it is run under the trolley track on a truck, and four or fie ton loads are picked up and loaded on the cars by two men in almost as few minutes."

Mr. Orbison: That is for loading; that is all right, I don't question that. But I can't see where the advantages to be gained are; the system certainly can't be put to any work other than the distributing of the metal, and you still have to do the pouring by hand—that is, the major portion of it. There might be certain molds that could be passed along the track and poured from the trolley. Outside of that, it could not be utilized unless by a series of switches. I have never seen the trolley system con-

structed, any other than on a double track, one track for outgoing and one for incoming ladles. Those I have seen were used for continuous pouring.

Mr. Thompson: It would appear to me that a single track trolley system, in an agricultural shop, for instance, where they put up mower wheels on every foot of ground for a space of probably 30x50 or 30x100 feet, and do the necessary lifting, that would require a perfect network of tracks and switches, which would be more expensive than a single span crane of light construction, with rails necessary to support it for the distance of the floor. I think the flasks could be handled quicker, as the hoists can be moved over the flasks without having to go back and forth to switches.

Mr. Carver: Mr. Thompson, has not your firm recently equipped a large agricultural foundry with the trolley system?

Mr. Thompson: No, we equipped them with the sand handling system, but I believe the Whiting Foundry Equipment Co. equipped them with an air hoist system and light traveling cranes, which cover the entire area of floor space.

Mr. Walker: I am a firm advocate of trolley systems in a foundry. Some three or four years ago, I had the privilege of going through the Walter A. Wood foundry in Hoosick Falls, New York. They used to run their iron on trucks on tracks. They have thrown them out completely and put in a double track overhead system. On their side floors, they took the overhead traveler and suspended to them air-hoists. The overhead track that ran down the center delivered the iron to the side floors and the side floors carried ladles of their own. The ladle delivering the iron delivered it into the ladle on the side floor swung from the crane; the crane picked it up and moved it on until on the side floor they poured it off, doing away with helpers to help carry out the iron, shaking out their own molds and piling up their flasks; where it took a half dozen men to wait on the molders before, one and two men do it and do the most of it at night. At night a few men took the castings out and carried them to the cleaning room; a track ran into the cleaning room

and switched off down the line of barrels and left all the castings right at the barrels where they were to be milled. This overhead system passed over overhead scales; there sat a man and took the weights. They went into their machine room and were delivered at the machines; when the machine work was done on them, they were taken from the machines to the setting-up departments on the same system. They were then taken as finished machines and put into the warehouse. It would be surprising to anybody to go into that foundry to see the small amount of laborers' service that was required. They cut out, they claim, fully one-half of the laborers, and did the work with this overhead system. I was so much impressed with it that I came back to Rockford, where I was with the Emerson Mfg. Co. then, and installed it on a small scale there. I didn't have an overhead traveler, as we found the work could be lifted without the aid of it, but I used it in distributing the iron. I found that we could put jobs on the bench that practically were made on the floors before and carried on with small bull ladles. These were delivered with the trolley ladle by carrying the length of the floor. With the truck systems, nine cases out of ten you stopped at a given point, and delivered iron around to six or eight floors. With this overhead system of delivery, the iron was delivered direct to the floors and a man did not move from the head of his floor at all, but stood there and took his iron as it came along. I now have charge of the J. I. Case foundry, at Racine. I am going to install the overhead system. It is not as heavy work as some, running anywhere from five pounds up to 2,500 and 2,000 lb. castings, down to little light snap work on separators. But I see no reason why the overhead system delivering iron to the floors with the overhead traveler and air hoist cannot handle iron and castings weighing anywhere from 10 lbs. to 2,000 or 3,000, and do it quicker and easier and save labor. Mr. Ramp says, the saving is 50 per cent in some cases, 30 per cent in others and 10 per cent in others; it depends altogether on what you have got to handle. I am so firm a believer in the overhead system, that we are going to put it in and expect to pay for it in a very short time.

Mr. Thompson: I would like to ask Mr. Walker if he refers to a traveling crane.

Mr. Walker: By overhead traveler, Mr. President, we mean a traveling crane. They cover the space of possibly two floors and from that overhead traveler hangs an air hoist. I would give more for one of the air hoists on a light traveler that I would for two cranes.

Mr. Thompson: Have the travelers a 20 or 30 foot span?

Mr. Walker: The width of the girder; I could not say whether it is 15 or 18 feet. I will say for handling molds, in handling iron anywhere from five lbs. up to 1,500 or 2,000 lbs., I consider the overhead system is unapproached.

Mr. Dyer: I will not say I am experienced in the use of the trolley system, but I am out for information with reference to it because we think we probably can save considerable labor by handling some of our material by an overhead traveler, which Mr. Walker has described. I don't know as it would be any advantage in a single track, one track going from the cupola and returning at the side some distance from it. I don't believe there would be any advantage in such a track over our floor tracks. In our work, we have 800 to 1,000 pairs of iron flasks which are being handled at night, and the breakage is quite an item. We have in mind the use of an overhead traveler with an air hoist on it for handling these flasks and stacking them up. I don't think we would at once discard our floor tracks for carrying the iron, but possibly we would. It has given us very satisfactory results. If anyone can give me any information, or if I can find any information in reference to handling the iron flasks such as we use and cleaning up the floor at night, possibly getting the castings out on the trucks, I would consider it good information. The arrangement of our factory would prevent us from carrying the trolley system into the shop, probably. I don't know whether it would entirely prevent it or not; but we run up five stories and for that reason we thought that tracks were the easiest thing to handle in the factory. But we had in mind, as I say, the use

of the pneumatic hoists on an overhead traveler in the foundry and I am anxious to see some in operation and hear from those who have them in operation.

Mr. Coffeen: In part of our work we use the overhead traveler and pneumatic hoist for shaking out, but those are on the heaviest flasks on the mower frames. I don't know about the breakage of flasks. I don't think we break a very large number of those flasks; we use iron flasks.

Mr. Jones: I have never operated a foundry in which we had an overhead system otherwise than a traveling crane or a series of light overhead travelers, which I think possibly may be referred to in this article. So far as removing the flasks and taking the castings out of the foundry, a system would have to be very good indeed to supplant a narrow gauge railroad through the concern. I have examined pretty carefully the working of the trolley system in the Sargent Co.'s works, that is, the gray iron department, and if I am not very greatly mistaken, they pour all of their brake shoes direct from the single trolley rail. When I say single, I mean the right and left of outgoing and incoming trolley. They no doubt make a success of it; they handle a great deal of iron and handle it very rapidly; handle their flasks with it, a great many of them, though not all of them. Personally, I have had no experience with the overhead trolley system.

Mr. Dalton: We have electric cranes in our plant; we handle everything by electricity. The Atlas Engine Works, I think, have a very complete trolley system, and pour everything by trolley. The taking out of castings and the handling of flasks depend a great deal on the location of your chipping room. The arrangement of our chipping room is such that it is between the machine shop and foundry. Our cranes run from one place to the other, take our castings into the chipping shop.

DISCUSSION ON INSPECTION OF CASTINGS.

A paper entitled "Inspection of Castings," by E. H. Putnam, was then read. This was read at the Cincinnati convention of

the American Foundrymen's Association, and was selected for discussion at this meeting.

Mr. Carver: In one of our leading agricultural works, I understand it is the practice with certain kinds of castings, such as mower wheels, to make them and stack them up out in the foundry yard, sometimes for one or two months before they are tumbled and given any chance for inspection. I would like to know what foundrymen think of that plan in the light of this paper read here urging more prompt action.

Mr. Walker: You spoke of some founders packing mower wheels out in the yard for a certain length of time without cleaning; circumstances might compel them to do that, still I should think that would hardly do if they are being made by the piece. We all find it very hard to come back onto a molder after a casting is a few days old for the making of it, for there is always a question as to whether he made it or did not make it. All inspection I have anything to do with is done almost immediately as soon as they are cleaned. This paper speaks of laying out the whole floor. I should think that hardly practicable; for castings go through a certain process, are turned over to the grinder and shippers, and we are supposed to have men of intelligence enough to know when they run across a bad casting and throw it out. We always lay the bad work out; every day's product has inspection and all that goes through is supposed to be good and that is the last we hear from it.

The meeting then adjourned to the third Wednesday in September.

A REVIEW OF THE FOUNDRY LITERATURE OF THE MONTH.

AMERICAN MACHINIST.

July 7, 1898.

Oscar E. Perrigs writes concerning "Pickling Castings." He says that his practice is to pickle nearly all the product, using facing in the molding only of such as cannot wait the pickling process. They use a solution of one part acid to three and a half water, in the summer, and one to three in winter. The operation of pouring the solution on the castings is performed three times, at intervals of three hours. Then, three hours after the last application the castings are thoroughly rinsed, with cold water in summer and hot water in winter, the rinsing to be very thorough. Small castings are simply immersed for a period of four hours, and then rinsed.

"Making Air-Tight Castings." Edmond Stevenson says: The shape of the casting has much to do with the matter. Make the casting of bronze, and as thin as possible, to stand the breaking strain, having as little surplus metal for finishing as may be, and they will stand the test.

SCHOOL OF MINES QUARTERLY.

Prof. W. H. Burr says that recent tests have proven that the use of the cast iron column cannot be justified on any reasonable ground whatever. This conclusion was arrived at as the result of tests, by request of Prof. Lanza, in the United States arsenal at Watertown, Mass., ten years ago, and others made in '96-'97, at Phoenixville, Pa., under the auspices of the Department of Buildings of New York City.

THE FOUNDRY.

John A. Macaulay contributes a valuable article on "Melting, Mixing and Casting Brass." He gives seventeen different mixtures, for various purposes, which ought to prove very interesting to all workers in brass and bronze. He says that

copper, melted and raised to a very high temperature, will, upon a test being cast, show gas holes, the gas having been absorbed while melting, and that it must be refined by stirring with a hardwood pole, till a test, dipped out and solidified in a suitable ladle, will show no shrinkage on the surface, and a test broken will show a close, fine grain. Stirring too long is as bad as not stirring at all. Now add powdered charcoal, and if a copper casting is required, pour at once. If bronze is wanted, add the tin and stir with a plumbago rod. As soon as the casting is sufficiently cool, plunge in water, for quick quenching, in order to prevent segregation. No brass or bronze alloys should be made too hot or gas holes will result. In alloys of copper and zinc, the latter is melted first and the copper added; because the chemical action of zinc on copper will cause it to melt, at its own fusing temperature, four per cent. of its weight of copper, thus enabling us to melt the mixture at less than half the temperature for copper alone.

R. D. Moore contributes an article on "Feeding Rolls." Mr. Moore gives evidence of having been one of those mechanics who give their mind to their work while performing it. Some of the methods he describes will prove novel to many molders, no doubt. Their effectiveness was proven by his own practice, and altogether his article is a valuable addition to foundry literature. Among other things, he explains on philosophic grounds, why a fillet at the point of juncture of the neck with the body of the roll is pernicious, instead of being a benefit, as many would suppose. His expedients for insuring solidity at this point are ingenious, and valuable adjuncts to the resources of the molder.

"A Foundry Clerk" writes on the way to keep track of stock piles; a way to estimate on a basis of statistic data and a method for monthly buying and for equalizing the same.

R. H. Palmer tells of his experience in adding steel shavings to molten iron in the ladle, resulting in very marked increase of strength in the casting product.

Mr. T. D. West writes upon the "Advance of Chemistry," wherein he strongly advocates its employment in the foundry as the only sure means of governing the quality of castings.

IRON AGE.

Issue of July 21.

An article on "Malleable Iron Water Backs" says that this material is taking the place of the coil or wrought iron pipe that has been in vogue where the pressure was too great for the ordinary cast iron water back. Under exceptional conditions the strain reaches 150 pounds to the square inch, to say nothing of the "hammer," caused by the sudden closing of a faucet. The malleable iron is much cheaper, and in every way more convenient, and is amply strong for the purpose.

IRON TRADE REVIEW.

During the month of July this journal gave much space to foundry matters. It gives, in the issue of July 7, an illustrated article on a "Pig Iron Casting Apparatus" which is opportune, in view of the recent movement in this direction.

In the issue of July 21 is an article by Malcolm McDowell on "Semi-Steel." He gives a cursory review of the desultory experimentation in the mixing of steel and iron, running back to the year 1873, when Mr. Sleeth, of the firm of Seaman, Sleeth & Black, made some casting for him from this mixture. Mr. McDowell claims that the latest practice in the manufacture of semi-steel castings develops a product vastly superior to common cast iron for many uses. It has great tensile and transverse strength and somewhat of malleability.

THE TRADESMAN.

Mr. Putnam illustrates some detached skim gates. The general shape of the gate is narrow and deep, the end that comes in contact with the pattern is shaped to correspond with the latter, viz., narrow and deep, or wide and thin, whilst the opposite end has a projection on the under side, to form a well under the pouring gate, so that the stream of iron may fall into a pool of

its own element, instead of striking upon the sand, and thus incurring danger of disturbing more or less of the sand.

In its issue of July 15th, the Foundrymen's Department of the Tradesman discusses the possibilities of commerce with Cuba and Porto Rico. It is pointed out that the machinery for the manufacture of sugar and molasses in Cuba has been, by the exigencies of war, destroyed; and that, since the manufacture of sugar is the principal industry of Cuba, and as cast iron enters largely into the machinery used, the foundry industry is deeply concerned, and the enterprise of American foundrymen should insure them a large share of this trade.